

Getting to the Heart of Green Design:

Making it *Green and Fair*

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Going from “Green” to Sustainable

Sustainability is now accepted as the overarching notion to guide all human activities including human settlement patterns and building design.

GreenBuild 2004 Sustainability Committee

GreenBuild 2004 Sustainability Track Sessions

- 203 - Global Perspectives on Water:
Steps Toward a Sustainable Future
- 303 - Sustainability and the Human
Spirit

Public Health

Modern medical practice does not concern itself merely with the treatment of the sick as individuals. That is only part of the work. It concerns itself in a large measure with the maintenance of the health of the community as a whole.

J.A. Salzmann, D.D.S
*Principles and Practice of
Public Health Dentistry, 1937*

Learning Objectives

Understand principles of:

- true lifecycle costing
- living wages
- and toxics reduction

Learn how social equity must be considered equally with economic prosperity and environmental quality in creating a sustainable world.

Our Environmental Impact



Mathis Wackernagel and William Rees

Life Cycle Cost and Life Cycle Assessment

Life Cycle Cost (LCC)

The estimated cost over the life of the material, asset, or program, including direct and indirect initial costs plus any periodic or continuing costs.

- US Office of Management and Budget
Circular No. A-94

Life Cycle Assessment (LCA)

The Life Cycle Cost, including the environmental impacts of our decisions.

The Sustainable Development Model

- There are economic, environmental, and social issues associated with every business decision we make.
- Every building product or process has an equity component associated with it.

Sustainable Development

Sustainable development is development that allows people “to meet the needs of the present without compromising the ability of future generations to meet their own needs.”

The Bruntland Commission
Our Common Future

The Sustainable Development Triad

“Sustainable development involves the simultaneous pursuit of:

- **economic prosperity,**
- **environmental quality, and,**
- **social equity.”**

World Business Council For Sustainable Development

What Is Equity?

- Respect
- Well-being
- Quality of Life

Respect and Well-Being

- Living Wages -

“Neither we, nor any other people, will ever be respected till we respect ourselves and we will never respect ourselves till we have the means to live respectfully.”

Frederick Douglass, The North American
Review, 1881

Quality of Life

- Toxics Elimination -

By finding alternative and substitute products for hazardous materials used in industrial processes and by consumers, we reduce the overall harmful effects both to human health and to the environment.

National Association of County and City Health Officials

Equity And Sustainable Development

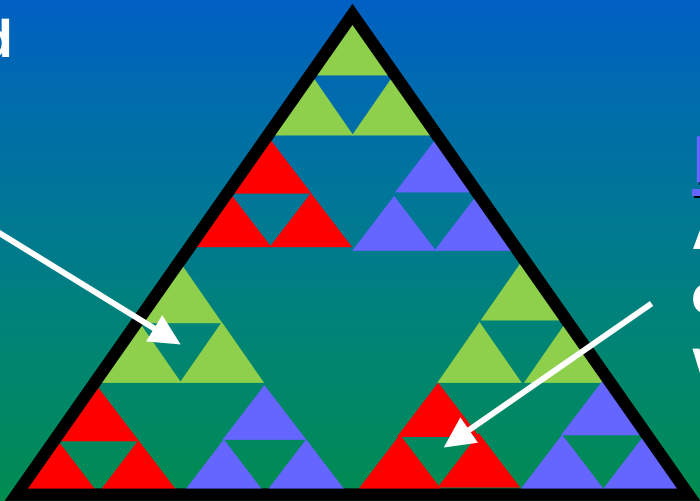
Ecology

Equity-Ecology

Are employees and customers safe making and using our products?

Economy-Equity

Are our employees earning a living wage?



Equity

Economy

“Are Our Employees Earning a Living Wage?”

WHAT IS A LIVING WAGE?

$$\begin{array}{ccccccc} \text{Take home wage}^1 & = & \text{Average family size}^2 & \times & \text{Cost of Nutrition + Clothing +} & & \\ & & & & \text{Health Care + Education +} & + & \text{Housing +} \\ & & & & \text{Potable Water + Childcare +} & & \text{Energy}^4 & + & \text{Savings (10\% of income)}^5 \\ & & & & \text{Trasportation}^3 & & & & \\ \hline & & \text{average \# of adult wage earners} & & & & \text{average \# of adult wage earners} & & \end{array}$$

International NGO Summit on
the Living Wage (1998)
<http://www.bsr.org>

“Are Employees and Customers Safe Making and Using Our Products?”

WHAT ARE TOXICS?

Substances that can cause severe illness, poisoning, birth defects, disease, or death when ingested, inhaled, or absorbed by living organisms.

US Environmental Protection Agency

Creating Long Term Value

There are economic, environmental, and social issues associated with every business decision we make.



“Is our production safe for the local and global communities?”



“Are our employees earning a living wage?”



Toward the Creation of a More Sustainable and Less Toxic Built Environment

Buildings, the Environment, Workers, and Their Communities

Buildings “Spread:”

Pollutants:

- 49% percent of SO₂
- 40% of landfill waste
- 33 % of CO₂
- 10% of particulates
- 6 billion pounds of cleaning chemicals

Toxics, including:

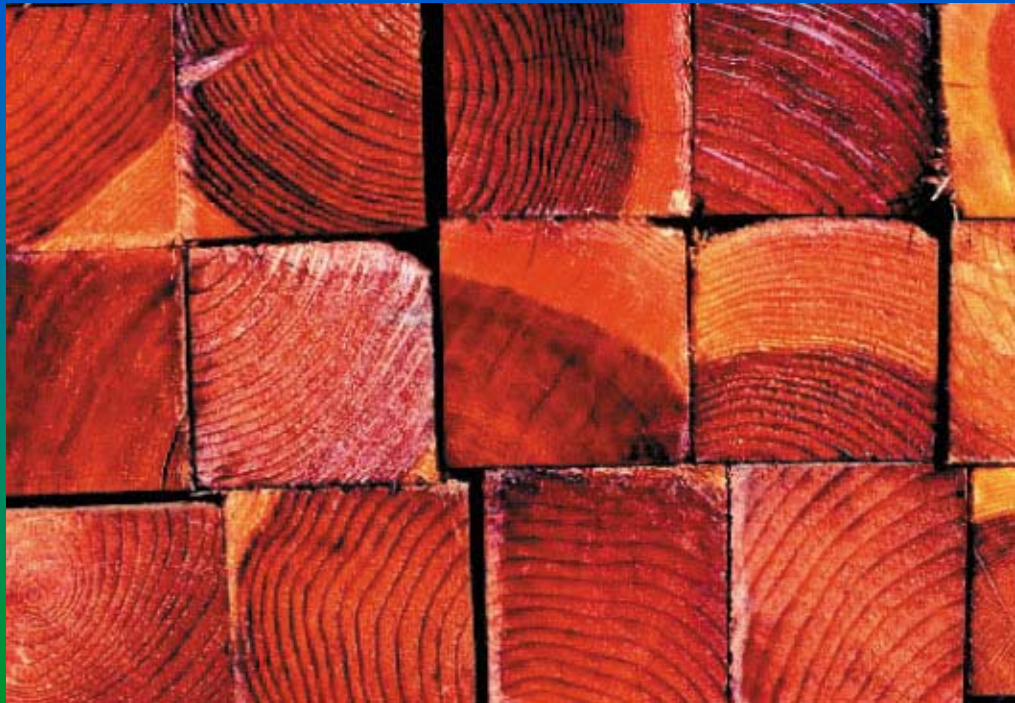
Arsenic, Asbestos, Chlorine, Dioxin, Formaldehyde, Lead, PCB's, VOC's, and many others.

Buildings “Employ:”

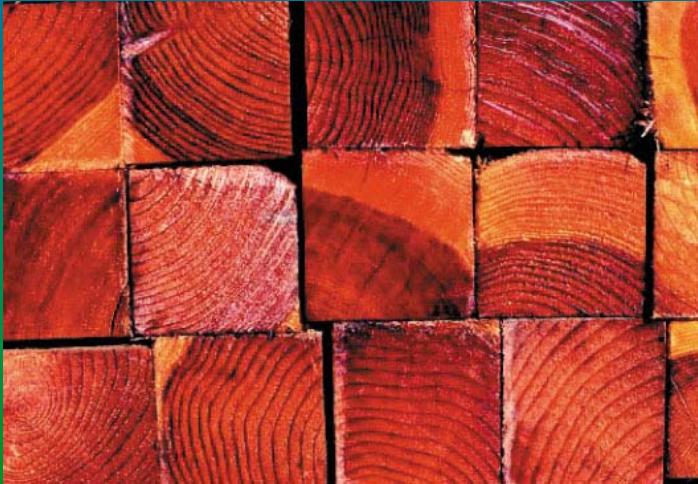
- 8.3 million wage, salary, and self-employed construction workers
- 4 million building cleaning workers
- 2.6 million general maintenance, repair, and grounds maintenance workers

Creating Long Term Value

There are economic, environmental, and social issues associated with every business decision we make.

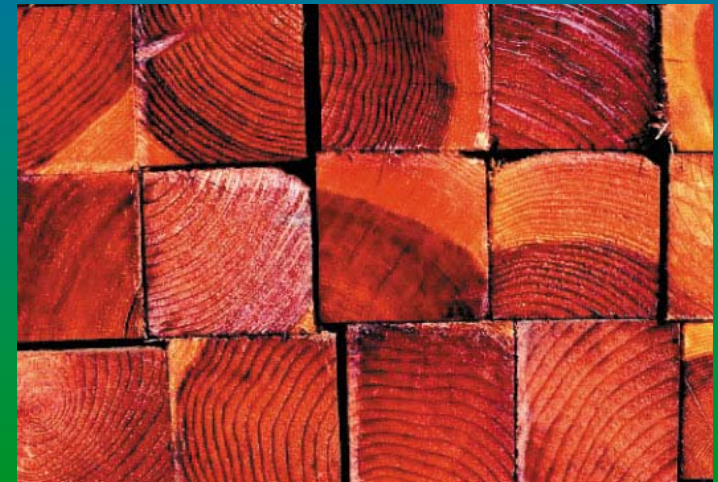


“Is our production safe for the local and global communities?”



“Are our employees earning a living wage?”

- Living Wage Standards
- Prevailing Wage Standards



Sustainable Design and Construction

Creates Facilities that:

- Are developed through an integrated design process that considers the interrelationships among all building components and systems and their connection to the environment to achieve maximum cost and operational efficiencies.
- Reduce the need for environmental mitigation by eliminating toxics and minimizing waste.
- Increase worker safety and well-being, and,
- Create long-term value.

The Government and Toxics Reduction

- National Environmental Policy Act (NEPA) 1970
- Pollution Prevention Act (PPA) 1990
- Resource Conservation and Recovery Act (RCRA) 1976
- EO 13101 promotes the Government's use of recycled products and environmentally preferable products and services
- EO13148 requires Agencies to reduce use of Cadmium, Lead, PCBs, mercury, and, naphthalene by 50% by 2007

The Government and Wages

“The least the federal Government can do is comply with the local standards of wages and labor prevailing in the locality where the building construction is to take place.”

Representative Robert L. Bacon (R-NY) 1927

- Davis-Bacon Act (1931)
- Walsh-Healy Public Contracts Act (1936)
- Service Contract Act (1965)

LEED Impact on GSA Requirements

Data from GSA LEED Cost Study, available at www.wbdg.org		NEW COURTHOUSE (262,000 GSF, Base Construction Cost = \$220/GSF)					
		Certified		Silver		Gold	
		1A Low Cost	2A High Cost	3A Low Cost	4A High Cost	5A Low Cost	6A High Cost
LEED CONSTRUCTION COST IMPACTS*							
	\$/GSF	(\$0.76)	\$2.18	(\$0.07)	\$9.57	\$2.97	\$17.79
	% CHANGE	-0.4%	1.0%	-0.03%	4.4%	1.4%	8.1%
		OFFICE BUILDING MODERNIZATION (306,600 GSF, Base Construction Cost = \$130/GSF)					
		Certified		Silver		Gold	
		1B Min. Facade	2B Full Facade	3B Min. Facade	4B Full Facade	5B Min. Facade	6B Full Facade
LEED CONSTRUCTION COST IMPACTS*							
	\$/GSF	\$1.78	\$2.73	\$3.94	\$5.55	\$10.58	\$10.22
	% CHANGE	1.4%	2.1%	3.1%	4.2%	8.2%	7.8%

GSA LEED COST STUDY available at www.wbdg.org

LEED and Community Issues

- **Environmental Issues** - attempt to relate specific goals or concerns with the influence on our natural environment.
- **Economic Issues** - address considerations related to first costs, life-cycle costs and estimated savings.
- **Community Issues** - focus attention on the benefits or disadvantages to the surrounding community and our built environment that result from the implementation of the measure.

The U.S. Green Building Council

Let's Make The Built Environment Green *and Fair*

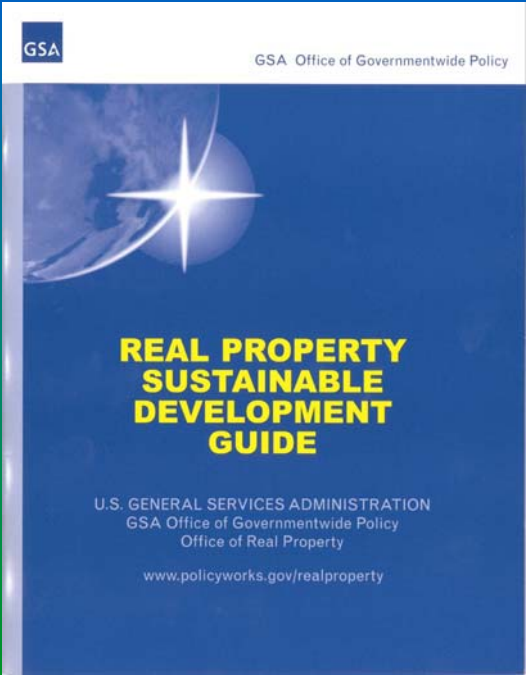
There are economic, environmental, and social issues associated with every business decision we make.

Green and Fair means:

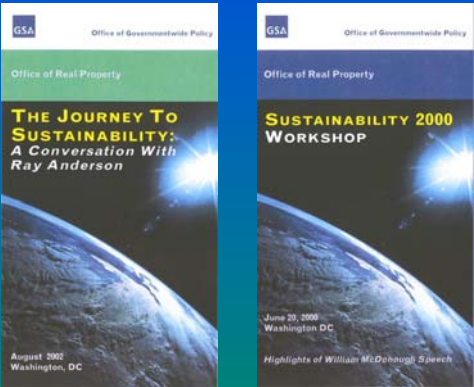
- Those who provide the products and services we specify earn a living wage.
- Production of the products and services we specify are safe for the local and global communities.

GSA Sustainable Development Resources

GSA Real Property
Sustainable
Development Guide



William McDonough &
Ray Anderson Videos



Information is available
at <http://www.gsa.gov>
Call 202.501.0856 for
copies of videos and
publications.

Sustainable
Development and
Society

